

REMARKS

Claims 1-10, 13 and 14 are pending in this application. Claims 1, 2, 7, 9, 13 and 14 are herein amended. Reconsideration of the rejections in view of these amendments and the following remarks is respectfully requested.

Objection to Claims

Claims 13 and 14 were objected to because of the informalities.

Accordingly, the claims have been amended to overcome the objection.

Rejections under 35 USC §102(b)

Claim 1 was rejected under 35 USC §102(b) as being anticipated by Olsen (EP 0926715).

Applicants respectfully traverse this rejection.

Responding to Applicants' previous response, the Examiner alleged as follows:

Olsen teaches a silicon carbide film (second film) overlying a first film (of oxide and/or nitride). The resist is patterned and then used to etch the underlying silicon carbide, optional nitride, oxide and silicon layers. Since the top film is the SiC, it will be etched first, followed by etching of the underlying layers of nitride, oxide and silicon. Therefore the first film is etched using the overlying, now patterned SiC second film as a mask.

Claim 1 has been amended to recite "ashing and removing the resist film."

In Olsen, the silicon carbide, optional nitride, oxide and silicon are etched at the same time using the photoresist as a mask. Thus, Olsen does not teach or suggest, among other things, "ashing and removing the resist film."

For at least these reasons, claim 1 patentably distinguishes over Olsen.

Thus, the 35 USC §102(b) rejection should be withdrawn.

Rejections under 35 USC §103(a)

Claims 2, 5, 7 and 9 were rejected under 35 U.S.C. §103(a) as being obvious over Li (US 2002/0177322).

Applicants respectfully traverse this rejection.

The Examiner alleged as follows:

17. With respect to the remaining independent claims, the applicant argues, on the top of p. 11, that Li et al does not indicate that the resist film is removed between the step of etching the second film to form a recess and partially expose the first film and step of dry-etching the first film using the gas mixture of fluorocarbon one of SF₆ and NF₃. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., removing the resist film between these two etching steps) are not recited in the rejected claim(s). . . .

Claims 2, 7 and 9 have been amended to recite "A method of manufacturing a semiconductor device, comprising, in the recited order, steps of:" to clarify the claimed invention.

Claim 2 recites, among other things, the step of "**ashing and removing the resist film**" between "etching the second film by using the resist mask as an etching mask to form a recess and expose a partial surface area of the first film on the bottom of the recess" and "dry-etching the first film exposed on the bottom of the recess by using mixture gas of fluorocarbon gas added with at least one of SF₆ and NF₃ to expose the conductive region of the substrate."

Similarly, claim 7 recites "etching the second film by using the resist mask as an etching mask under a condition that an etching rate of the second film is faster than an etching rate of the

first film, to form a recess and expose a partial surface area of the first film on a bottom of the recess; **ashing and removing the resist film**; and dry-etching the first film exposed on the bottom of the recess by using mixture gas of fluorocarbon gas added with at least one of SF₆ and NF₃, to expose the conductive member of the substrate."

Also, claim 9 recites "etching the third film by using the resist mask as an etching mask and using mixture gas of fluorocarbon gas added with at least one of SF₆ and NF₃ to expose a partial surface of the second film; **removing the first resist film**; forming a second resist film with a second opening on surfaces of the etched third film and exposed second film, the second opening being included in an area of the first opening and partially overlapping with the wiring."

Nothing in Li et al indicates that "**ashing and removing the resist film**" is conducted between "etching the second film by using the resist mask as an etching mask to form a recess and expose a partial surface area of the first film on the bottom of the recess" and "dry-etching the first film exposed on the bottom of the recess by using mixture gas of fluorocarbon gas added with at least one of SF₆ and NF₃ to expose the conductive region of the substrate."

For at least these reasons, claims 2, 7 and 9 patentably distinguish over Li et al. Claim 5, depending from claim 2, also patentably distinguishes over Li et al for at least the same reasons.

Claims 3 and 4 were rejected under 35 U.S.C. §103(a) as being obvious over Li, and further in view of Bajaj (U.S. Patent No. 6,261,157).

Claims 3 and 4 depend from claim 2, which patentably distinguish over Li et al. Bajaj has been cited for allegedly disclosing that in a typical semiconductor device the conductive

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layer is formed by depositing copper, while the barrier layer is formed by depositing tantalum. Such a disclosure, however, does not remedy the deficiencies of Li et al.

For at least these reasons, claims 3 and 4 also patentably distinguish over Li et al and Bajaj.

Claims 6, 8, 10 and 13 were rejected under 35 U.S.C. §103(a) as being obvious over Li, and further in view of Dabbaugh et al (U.S. Patent No. 6,362,094).

Claims 6, 8 10 and 13 respectively depend from claims 2, 7, 9 and 1, which patentably distinguish over Li et al. Dabbaugh et al has been cited for allegedly disclosing semiconductor manufacturing method using hydrogenated silicon carbide and also teaches that hydrogenated silicon carbide layer may be conventionally formed by plasma enhanced CVD using a silane source and an oxygen source and that tetramethilsilane may be used as the silane source while carbon dioxide layer be used for the oxygen source. Such disclosures, however, do not remedy the deficiencies of Li et al.

For at least these reasons, claims 6, 8, 10 and 13 also patentably distinguish over Li et al and Dabbaugh et al.

Thus, the 35 USC §103(a) rejections should be withdrawn.

In view of the aforementioned amendments and accompanying remarks, Applicant submits that that the claims, as herein amended, are in condition for allowance. Applicant requests such action at an early date.

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If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicant's undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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